ENVIRONMENTAL RESERVE

Policy and Background Information

Policy Paper

EDMONTON METROPOLITAN REGIONAL PLANNING COMMISSION

DECEMBER 1988

89-05588/

TABLE OF CONTENTS

PAGE

FOREWORD

PART I

ENVIRONMENTAL RESERVE POLICY

1. INTRODUCTION 1
2. DEFINITIONS 1
3. ENVIRONMENTAL RESERVE DEDICATION 2
4. ENVIRONMENTAL RESERVE DECISIONS 4

PART II

BACKGROUND INFORMATION

1. INTRODUCTION 5
2. DEFINITION OF ENVIRONMENTAL RESERVE 5
3. POWERS OF THE SUBDIVISION APPROVING AUTHORITY 6
4. EXCEPTIONS TO ER DEDICATION 7
5. AMOUNT OF ER DEDICATION 7
6. CRITERIA FOR ER DEDICATION 7
7. GEOLOGICALLY SENSITIVE LANDS 9
8. HYDROLOGICALLY SENSITIVE LANDS 11
9. ENVIRONMENTAL RESERVE SETBACK 12
10. INFORMATION REQUIREMENTS 13
11. CONCLUSION 13

FIGURES

Figure 1 Exceptions to Environmental Reserve Dedication 8
Figure 2 Potential Environmental Reserve Lands 10

FOREWORD

The purpose of this report is to present the Commission's policies on Environmental Reserve and provide background information to these policies. The report is divided into two parts.

Part I contains Environmental Reserve policies adopted by the Edmonton Metropolitan Regional Planning Commission in December, 1988. These policies will guide the Commission in making decisions on subdivision applications involving the dedication of Environmental Reserve. They may also serve as a useful reference for other municipalities in the Region with their own subdivision approving authority.

Part II provides background information on the enabling planning legislation dealing with Environmental Reserve, as contained in the Planning Act. This information is intended to assist the reader in understanding the legislation, and to supplement the more specific legal and planning advice the reader may receive regarding Environmental Reserve.

Part I.

Environmental Reserve Policy

I. ENVIRONMENTAL RESERVE POLICY

1. INTRODUCTION

Development places pressures on the natural environment. As land is converted from a raw to a developed state, sloughs and creeks are filled, trees and vegetation removed, and slopes and banks contoured. This situation has led to the realization that not all land should be developed. Certain environmentally sensitive lands should be conserved and protected for the greater public good. Thus, the Alberta Planning Act provides for the dedication of "environmental reserve", or ER. Specifically, the Act, as a condition of subdivision approval, authorizes a subdivision approving authority to require a landowner to dedicate to a municipality, without compensation, areas considered to be environmentally sensitive. These areas, in turn, must be retained in their natural state, or, alternatively, used only for park purposes.

Decisions involving environmental reserve dedication are complex and require the exercise of judgement, based upon technical information and expert advice. For this reason, policies are needed to guide the decision-making process, and ensure that it operates in a fair and consistent manner. The following environmental reserve policies have been adopted by the Edmonton Metropolitan Regional Planning Commission, to assist the Commission in making decisions involving environmental reserve dedication, in its capacity as the subdivision approving authority for urban and rural municipalities in the Edmonton Metropolitan Region.

2. DEFINITIONS

For the purpose of these policies, the following definitions shall apply:

Commission, in the context of these policies, means the Edmonton Metropolitan Regional Planning Commission, acting as the subdivision approving authority, or a person or persons appointed by the Commission to act as the subdivision approving authority.

Floodplain means the area, usually lowland, adjoining the channel of a river, creek or other waterbody, which has been, or may be, covered by water during a seasonal flood or a defined annual flood, usually a 1 in 100 (1:100) year flood.

Groundwater Recharge Area means lands that have the natural capacity to allow precipitation and surficial water to infiltrate to the underlying aquifer. These areas are usually, but not always, associated with a natural drainage course or minor waterbody.

Highwater Mark means the mark made by the action of water under natural conditions on the shore or bank of a body of water whereby the action has been so common and usual that it has created a difference between the character of the vegetation, soil or debris on one side of the mark and the other side. The area below the highwater mark is usually, but not always, owned by the Crown.

Minor Waterbody means a lowlying, shallow area of water with no permanent direct source, other than surface drainage and natural groundwater movement, that performs an important hydrological function by contributing to groundwater recharge and reducing downstream runoff during heavy rains. Minor waterbodies include sloughs, swamps, ponds and bogs, and their associated groundwater recharge area.

Natural Drainage Course means a depression in the landscape, formed through the eroding action of water, that performs an important hydrological function by carrying runoff water from surrounding areas to watercourses, by retarding the rate of flow of water adjacent to flatland and reducing erosion, and by enhancing groundwater recharge and thereby increasing the waterholding capacity of the soil. Natural drainage courses include ravines, coulees and gullies, and their associated groundwater recharge area.

Shoreland means the area immediately adjacent to a waterbody (e.g. lake, river, stream, etc.) up to the highwater mark, and containing flora and fauna essential and unique to the ecology of the waterbody.

Steep Slope means lands containing a slope of 15 percent or greater, or a lesser slope where instability is detected.

Top-of-the-Bank means the upper break of the bank defining the most distinct ridge of topographic discontinuity in slope between the upper plateau and the valley wall.

Unstable Slope means lands of significant slope, usually associated with a river or creek valley, that are unstable due to soil conditions, depth of bedrock or surface erosion and may pose a hazard through slumping or disintegration.

Valley means the depressional area associated with a river or creek and characterized by a continuous, definable valley wall, a steep slope, and a topographically distinct depression.

3. ENVIRONMENTAL RESERVE DEDICATION

The Planning Act provides for the dedication of environmental reserve in fairly narrow and specific circumstances. These circumstances involve hydrologically sensitive lands (i.e. natural drainage courses, waterbodies, floodplains, shorelines, valleys) and geologically sensitive lands (i.e. steep slopes, unstable slopes). The Act also cites four situations where the Commission cannot require the dedication of environmental reserve, despite the sensitivity or characteristics of the site. Thus, the Commission must work within the definition of ER lands and the defined exceptions to ER dedication in making its decision.

Policy 1: Exceptions to Environmental Reserve Dedication

In accordance with the Planning Act, the Commission shall not require the dedication of environmental reserve where

(a) only one lot is being subdivided from a previously unsubdivided quarter section of land, despite the use and size of that lot,

(b) land is being subdivided into lots of 40 acres or more in size, and the lots are to be used solely for agricultural purposes,

(c) the land being subdivided is two acres or less in area, or

(d) environmental reserve was previously provided in respect of the land that is the subject of the subdivision.

Policy 2: Environmental Reserve Dedication

Subject to Policy 1, the Commission shall require the dedication of environmental reserve to conserve and protect the following environmentally sensitive areas:

(a) a minor waterbody,

(b) a natural drainage course,

(c) a floodplain,

(d) shoreland,

(e) a valley,

(f) a steep slope, or

(g) an unstable slope,

unless it can be demonstrated, to the satisfaction of the Commission, that environmental reserve dedication is unnecessary or impractical under the circumstances, and the environmentally sensitive area can be conserved and protected in a satisfactory alternative manner.

Policy 3: Future Dedication of Environmental Reserve

Where the provision of environmental reserve is considered to be appropriate at the time of subdivision, to conserve and protect an environmentally sensitive area, but the proposed subdivision falls under the exceptions stated in Policy 1, the Commission shall require that any new lot lines be aligned to accommodate the dedication of environmental reserve upon the future subdivision of the subject lands.

Policy 4: Environmental Reserve Setback

(1) The Commission shall require that environmental reserve encompass those lands necessary to conserve and protect the environmentally sensitive area, and to provide public access to the environmentally sensitive area.

(2) Where an environmental reserve setback is considered necessary, the Commission

(a) shall require that it be 10 m (33 feet) in average width from the defined boundary of the subject environmentally sensitive area (e.g. highwater mark, top-of-the-bank, shoreline), unless it can be demonstrated, to the satisfaction of the Commission, that a lesser width is appropriate, or

(b) may require that it be greater than 10 m in average width where this is considered appropriate, taking into account the scale of the environmentally sensitive area or the nature of any hazardous or unsafe conditions that exist.

4. ENVIRONMENTAL RESERVE DECISIONS

Environmental reserve decisions are subjective, due to the changing nature of the environment. The subdivision approving authority may therefore require, prior to making a decision, geotechnical and hydrological information. Requiring such information, will ensure that its decisions are based upon sound engineering analysis, that regional and local interests are taken into account, and that, if challenged, its position is supportable from a technical standpoint.

Policy 5: Information Requirements

Prior to making a decision on a subdivision with the potential for environmental reserve dedication, the Commission may require an applicant to submit:

(a) geotechnical information (e.g. slope stability tests; geomorphology studies),

(b) hydrological information (e.g. water table tests; floodplain reports),

(c) topographical information (e.g. contour maps, site constraint maps),

or such other information as is necessary to assess the environmental sensitivity of the subject area.

Policy 6: Commission Decision

Where environmental reserve is to be dedicated as a condition of subdivision approval, the Commission shall:

(a) specify in its decision the approximate location and amount of environmental reserve land to be dedicated; and

(b) require that the subdivision be registered by Plan of Survey, whereby the plan shall show any significant natural features relating to the subdivision decision, such as a highwater mark, top-of-the-bank or shoreline.

Part II.

Background Information

II. BACKGROUND INFORMATION

1. INTRODUCTION

Development places pressure on the natural environment. As land is converted from a raw to a developed state, sloughs and creeks are filled, trees and vegetation removed, and slopes and banks contoured. These actions have led to the realization that not all land should be developed. Some lands are environmentally sensitive and need to be retained in their natural form for the greater public good. For this reason, the Alberta Planning Act makes provisions for the acquisition of lands as environmental reserve.

Specifically, the Act requires that, as a condition of subdividing land, a landowner may have to provide to a municipality, without compensation, lands considered to be environmentally sensitive. In turn, such lands must be retained in a natural form or, alternatively, used for park purposes. The acquisition of this land through the subdivision process is termed environmental reserve dedication.

2. DEFINITION OF ENVIRONMENTAL RESERVE

While environmentally sensitive lands commonly encompass a wide range of biological, hydrological, geological and functional factors, the Planning Act narrowly defines those circumstances where environmental reserve can be acquired. The Act provides that environmental reserve may only be dedicated:

(a) where the lands comprise a swamp, gully, ravine, coulee or natural drainage course;

(b) where the land is subject to flooding or is unstable; or

(c) where the land abuts the bed and shore of a lake, river, stream or other body of water, and is required for the purpose of preventing pollution or providing public access.[1]

Three important points can be made concerning this definition.

First, environmental reserve is meant to conserve the "natural" component of a site where special circumstances warrant. It is not a tool for indiscriminate land acquisition, or the means through which a municipality can arbitrarily increase its recreational land supply.

---

1. In this situation, the Planning Act specifies that a strip of land not less than 6 m (20 feet) be dedicated as environmental reserve.

Second, the legislation addresses hydrological (water related) and geological (land related) sensitivity, but does not mention biological (plant and animal related) or functional (recreational related) sensitivity or importance. Thus, biologically sensitive lands (e.g. an area comprising a significant wildlife habitat, or an area containing a visually prominent tree stand) or functionally important lands (an area forming part of an integrated community open space system) cannot be acquired as environmental reserve, unless such lands also exhibit hydrological or geological sensitivity.

Third, the determination of those lands to be dedicated as environmental reserve requires a considerable degree of judgement. Improved building technology and design standards have rendered virtually any site "developable" from a purely technical standpoint. Furthermore, not every creek, slough or swamp is worth protecting. In making a decision, the subdivision approving authority would need to evaluate the importance of the environmentally sensitive feature. For this reason, engineering analysis and professional input would play an important part in any decision, as would established policy.

3. POWERS OF THE SUBDIVISION APPROVING AUTHORITY

The Planning Act defines the powers of the subdivision approving authority (SAA) with respect to the dedication of environmental reserve. Four points can be made concerning these powers.

First, environmental reserve can only be acquired through the subdivision process. If a landowner chooses not to subdivide his land, only develop it, environmental reserve dedication is not a consideration. A development officer or a development appeal board does not have the authority to require environmental reserve as a condition of approval of a development permit.

Second, the SAA decides directly on environmental reserve dedication. While the municipal council and key government agencies (i.e. Alberta Environment, Alberta Forestry, Lands and Wildlife) may make a recommendation to the SAA, they have no direct decision-making powers in the matter. However, because the SAA is bound by the regional plan and any municipal statutory plans, the policies of these documents may influence, or even dictate, the outcome of an environmental reserve decision.

Third, any decision by the SAA involving the dedication of environmental reserve can be appealed to the Alberta Planning Board by the landowner, the municipality, or an individual owning property adjacent to the lands being subdivided. Therefore, in the event of a dispute, the decision on an ER issue rests with the Board.

Finally, any decision involving environmental reserve is discretionary. The Planning Act does not compel the SAA to require environmental reserve in a given situation but, instead, delegates powers to the SAA to be exercised as determined appropriate.

4. EXCEPTIONS TO ENVIRONMENTAL RESERVE DEDICATION

The Planning Act defines four situations where the SAA has no jurisdiction to acquire environmental reserve. As shown in Figure 1, these exceptions are:

(a) where only one lot is being subdivided from a previously unsubdivided quarter section of land, despite the use and size of that lot;

(b) where the lots being created are 40 acres or more in size, and are to be used solely for agricultural purposes;

(c) where the land being subdivided is two acres or less in area; and

(d) where environmental reserve was provided with respect to the land that is the subject of the proposed subdivision.

It is common practice, in the case of situations (a) and (b), for the SAA to require the new lot lines to be aligned to accommodate the dedication of environmental reserve, should further subdivision of the subject lands occur. For example, where a large agricultural lot, falling under exception (b), is being subdivided along a major creek, the SAA would normally align lot lines above the top of the creekbank in a configuration that would accommodate environmental reserve dedication along the creek if the future subdivision of the site occurs.

5. AMOUNT OF ENVIRONMENTAL RESERVE DEDICATION

The Planning Act places no limitations on the amount of environmental reserve that can be acquired through the subdivision process. Once the SAA makes the determination that lands should properly be dedicated as environmental reserve, the amount is not subject to a formula, maximum or minimum restrictions or other criteria.

It is important to note that the actual amount of environmental reserve dedicated affects the maximum amount of public reserve (i.e. MR, SR, MSR) that can be acquired through the subdivision process. Specifically, environmental reserve is deducted from the gross area of a parcel of land to be subdivided prior to calculating the potential municipal or school reserve owing. Thus, the general formula for public reserve dedication would become: Gross Acreage of Lands to be Subdivided - Gross Acreage of Environmental Reserve Dedicated X 10 Percent Maximum Public Reserve Owing = Maximum Amount of Public Reserve which can be Acquired.

6. CRITERIA FOR ENVIRONMENTAL RESERVE DEDICATION

Environmental reserve lands must exhibit hydrological or geological sensitivity, or both. Hydrologically sensitive lands represent areas where intensive development is likely to cause degradation of the natural environment or have direct or indirect adverse impacts on human settlement due to water related factors. Such areas typically include floodplains, shorelines, river or creek valleys, minor water bodies, and natural drainage courses. Geologically sensitive lands represent areas posing hazards to development due to soil or topographical factors. These areas typically include steep slopes and unstable slopes.

Figure 1

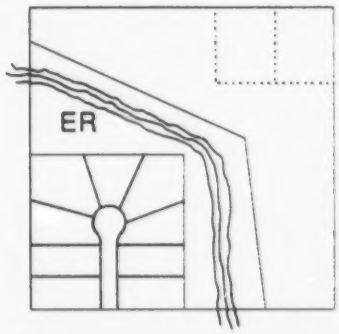
EXCEPTIONS TO ENVIRONMENTAL RESERVE DEDICATION

No Environmental Reserve can be required when:

Only one lot is being subdivided from an unsubdivided quarter section.

The lots being created are all at least 16.2 hectares (40.0 acres) in size and used solely for agricultural purposes.

The land being subdivided is 2 acres or less in size.



Reserve was previously dedicated in respect to the land being subdivided.

It should be pointed out that hydrological and geological criteria would be used together, and in practice there may be considerable overlap. For example, a river valley may comprise a shoreline, a floodplain, and steep and unstable slopes, while a floodplain could encompass a creek valley and considerable areas beyond the creekbank proper. It would need to be determined, through the planning process, how the various environmentally significant features of a site "add-up". And practicality, consistency and reasonableness would play a large part in any decision.

Figure 2 shows examples of geologically and hydrologically sensitive lands which could be dedicated as Environmental Reserve.

7. GEOLOGICALLY SENSITIVE LANDS

The following features are considered to be geologically sensitive for the purposes of ER dedication.

(a) Unstable Slopes

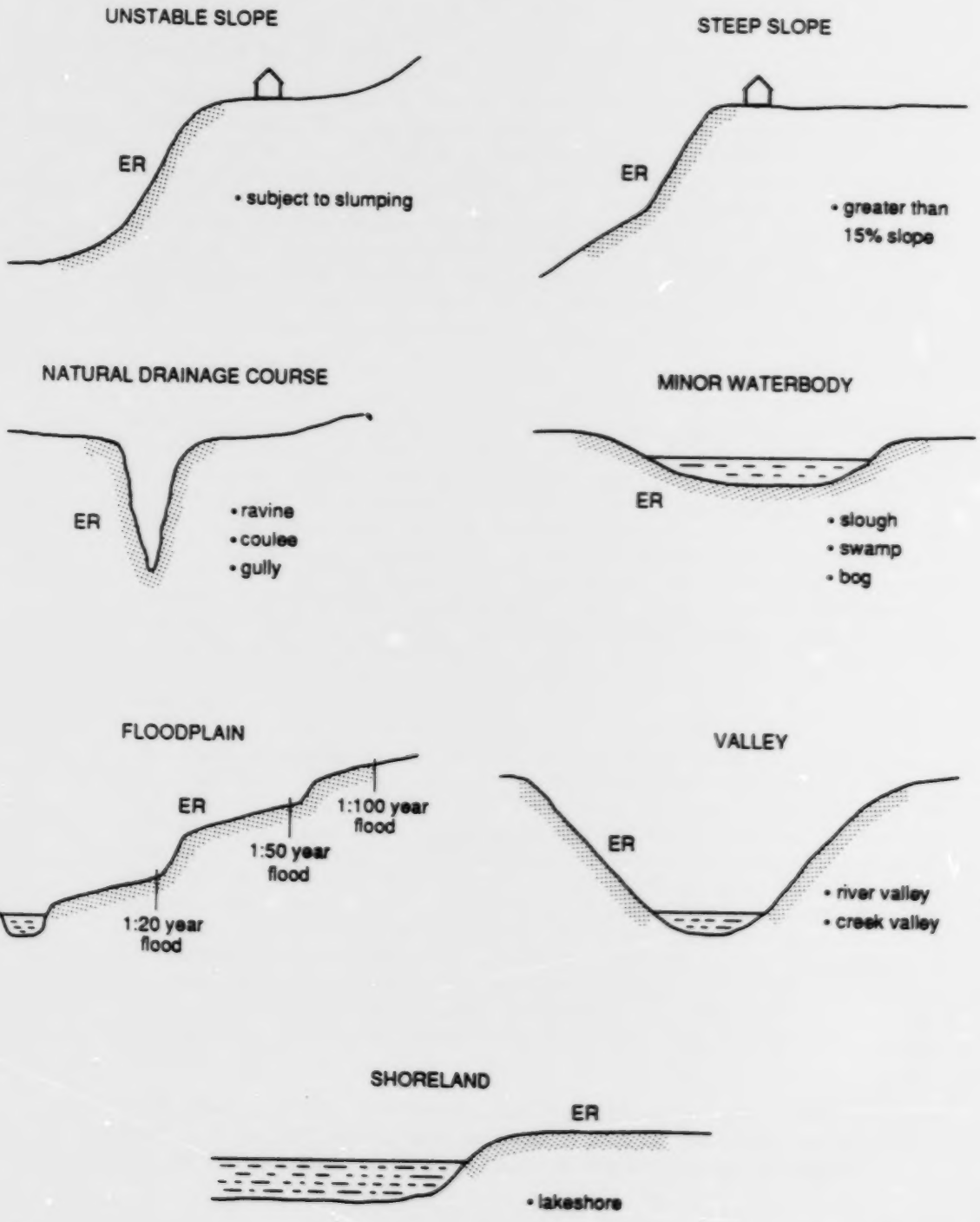
Unstable slopes are land forms of significant slope, usually but not always associated with a river or creek valley, that are unstable due to soil conditions, depth of bedrock or surface erosion. These features pose a hazard due to slumping or disintegration of the slope. Unstable slopes can be dedicated as environmental reserve, and the ER should encompass the entire area of instability, as defined through a geotechnical study or other appropriate analysis.

(b) Steep Slopes

A slope of 15 percent or greater is usually considered "steep" for purposes of environmental reserve dedication, although slopes of less than 15 percent can also be considered steep where instability is detected. The decision will depend upon geotechnical information, the degree of alteration necessary to accommodate development, the ability to employ slope-adaptive construction techniques, and the relationship of the slope to adjoining lands. ER lands should encompass the entire slope where steep conditions exist.

Figure 2

POTENTIAL ENVIRONMENTAL RESERVE LANDS



8. HYDROLOGICALLY SENSITIVE LANDS

The following features are considered to be hydrologically sensitive for purposes of ER dedication:

(a) Natural Drainage Courses

A natural drainage course is a depression in the landscape formed by the eroding action of water. Ravines, coulees and gullies and their associated groundwater recharge areas are considered to comprise natural drainage courses. These features perform an important hydrological function by carrying runoff from adjacent areas to watercourses; by retarding the rate of flow of water from surrounding flatland and reducing erosion; and by enhancing groundwater recharge and thereby increasing the waterholding capacity of the soil. Natural drainage courses, if considered significant, should be dedicated as environmental reserve, with a suitable setback from the top of the bank (if one exists) to preserve their function and enhance their relationship with surrounding lands.

(b) Minor Waterbodies

Minor waterbodies are lowlying, shallow areas of water which have no permanent direct source, other than surface and natural groundwater drainage. These features include ponds, sloughs, swamps and bogs and their associated groundwater recharge areas. Minor waterbodies perform an important hydrological function by contributing to groundwater recharge and reducing downstream runoff during heavy rains. Moreover, these features often contain a large amount of organic matter in their soils and for this reason are unstable and not suitable as a building foundation. Minor waterbodies capable of retaining water most of the year and occupying a significant land area or serving an important ecological function, should be protected as environmental reserve.

(c) Floodplains

A floodplain is an area, usually lowland, adjoining the channel of a river, creek or other waterbody, which has been or may be covered by water during a regional flood or a 1 in 100 (1:100) year flood. The approach to protecting floodplains in the province varies widely because certain floodplains extend well beyond the river valley or creek valley and encompass considerable tracts of privately-owned lands. Normally, the entire floodplain should be dedicated as environmental reserve, however, this principle can be modified by specific planning studies or similar information. It must also be recognized that other mechanisms exist to prevent development from encroaching into floodplain areas (e.g. zoning controls, private covenants, etc.). The issue is best approached through a comprehensive plan for the area (i.e. lake management plan, river valley plan) which provides a practical and equitable system for dealing with floodplains and environmental reserve dedication.

In the absence of a comprehensive plan, the SAA would need to examine each situation on its merit, relying upon professional analysis and advice and keeping in mind the complex legal and planning issues relating to floodplain development.

(d) Shoreland

Shoreland is the area of land above the high water mark that is immediately adjacent to a lake, river, or other waterbody. This area comprises the bank and vegetated areas, and is ecologically sensitive. A strip of environmental reserve should be dedicated along waterbodies to serve as a protective buffer, and allow public access to the waterbody proper. The actual width of the buffer strip would vary, however, the Planning Act specifies that it must be at least 6 m wide.

(e) Valleys

A valley is the depressional area associated with a river, creek, or other waterbody. These features are often a composite of environmentally sensitive features. For example, a river valley may contain a shoreline adjacent to the watercourse and a 1:100 year floodplain. Ideally, river valleys and creek valleys should be dedicated as environmental reserve in their entirety. However, this is not always practical because of land ownership patterns, which can create a situation where entire parcels are contained within the valley; the discontinuity of valley topography, which may produce distinct areas capable of accommodating private development; and public policy decisions which over time establish a precedent for future subdivisions. At a minimum, the immediate shoreland of a river or creek should be dedicated as environmental reserve, and where hazardous and unsafe conditions exist, due to slope subsidence or erosion, the entire river valley should be acquired as environmental reserve.

9. ENVIRONMENTAL RESERVE SETBACKS

An environmental reserve setback is often required and usually includes lands that adjoin a defined environmentally sensitive area. These buffers provide additional protection for the area and allow direct public access to the area.

The width of an ER setback varies, depending upon the situation, but it should be wide enough to conserve the environmentally sensitive feature and afford protection to the public. Alberta Environment suggests a minimum environmental reserve setback of 10 m be provided, unless it can be demonstrated that a lesser setback width is adequate because of man-made or natural site constraints. Setbacks exceeding 30 m have been dedicated along major river valleys in some municipal jurisdictions in the province.

10. INFORMATION REQUIREMENTS

In order for the SAA to make a decision on a subdivision application, the applicant may be required to submit specific information. In terms of environmental reserve, information requirements fall into two basic categories: (1) geotechnical information and (2) hydrological information.

Geotechnical information relates to sensitive water-based features. The purpose of such information is to identify, measure and evaluate the sensitivity and potential impact of development on a geological feature. Typically, such information would take the form of slope stability tests and soil morphology tests.

Hydrological information relates to sensitive water-based features. Such information would identify, measure and evaluate the sensitivity and potential impact of development on a hydrological feature. Such information would take the form of floodplain, top-of-the-bank, and shoreline delineation reports and studies, as well as water table tests.

11. CONCLUSION

The foregoing discussion provides an overview of environmental reserve dedication, but it must be recognized that the topic is complex. While it is not possible to create a formula that applies in every situation, it is possible to make consistent, equitable and reasonable decisions that fairly balance the public interest with the rights of the private landowner. To a great extent, the SAA will be guided by professional advice, practical experience and established policy in making decisions.